

What is claimed is:

1. An apparatus adapted for drainage of fluid, air and contaminants from a mammalian thoracic cavity comprising:

an axially elongate tube with a proximal and a distal end;

5 a drainage lumen within said tube and extending substantially the length of said tube;

an extracorporeal fixation device;

a plurality of distal openings into the drainage lumen;

10 a valve to selectively control an influx of fluid, air or contaminants into, the body cavity through the drainage lumen of said axially elongate tube, wherein said valve is opened by the application of a vacuum;

a region of increased flexibility disposed near the distal end of the tube; and

15 a control rod extending from the proximal end of the tube to a point distal to the region of increased flexibility, wherein axial movement of the control rod causes selective and controllable bending of the tube in the region of increased flexibility.

20 2. The apparatus of Claim 1 wherein said extracorporeal device is slideably movable along the length of the tube.

3. The apparatus of Claim 1 wherein said extracorporeal fixation device operably locks to the exterior of the tube.

4. The apparatus of Claim 1 wherein said valve allows passage of a trocar therethrough when the valve is in the open position.

25 5. The apparatus of Claim 1 comprising a plurality of control rods, wherein the control rods can selectively place tension on the distal end of the tube, resulting in bending of the tube in the region of increased flexibility.

6. An apparatus adapted for drainage of fluid, air and contaminants from a mammalian body cavity comprising:

30 an axially elongate tube with a proximal and a distal end;

a drainage lumen extending substantially the length of the tube;

a region of increased flexibility immediately proximal to a more rigid region at the distal tip of said axially elongate tube.

a plurality of distal openings into the drainage lumen in said axially elongate tube;

5 a plurality of control rods acting in opposition, wherein said region of increased flexibility is selectively bendable by applying tension to at least one but not all of the control rods, and wherein the control rods extend to a control apparatus located at or near the proximal end of said axially elongate tube; and

10 a valve, wherein an efflux or an influx of fluid, air or contaminants is selectively controlled out of or into the body cavity through the drainage lumen of said axially elongate tube.

7. The apparatus of Claim 6 wherein said control rods are manually operated.

15 8. The apparatus of Claim 6 wherein control rods are electrically operated.

9. A method of draining of fluid, air and contaminants from a mammalian thoracic cavity comprising:

20 removing an axially elongate tube with a proximal and a distal end and a drainage lumen comprised therein from its sterile package;  
Inserting the distal end of the axially elongate tube into an incision in the thoracic wall of a mammalian patient;

25 Selectively bending a region of increased flexibility near the distal tip of the axially elongate tube while advancing the tube into the chest cavity; and

Selectively opening or closing a pre-attached valve to control the influx of fluid, air or contaminants into the body cavity through the drainage lumen of said axially elongate tube.

30 10. The method of Claim 9 wherein said bending of the axially elongate tube is controlled from the proximal end of said axially elongate tube whereby tortuous anatomy can be navigated.

11. The method of Claim 9 wherein said bending of said axially elongate tube is caused by retraction of a control rod.

12. The method of Claim 9 wherein said bending of said axially elongate tube is caused by electrical activation of a shape-memory actuator.

5 13. The method of claim 9 further comprising the steps of:  
inserting a hollow needle in the chest wall;  
inserting a guidewire through the hollow needle into the chest;  
removing the hollow needle;  
advancing the chest drainage tube and a tapered trocar into the  
10 chest wall over the guidewire; and  
removing the trocar.

14. The method of Claim 13 wherein said chest drainage tube is pre-mounted to said trocar.

15 15. The method of Claim 13 wherein said chest drainage tube is subsequently fixed in position relative to the opening in the chest wall.

16. The apparatus of Claim 9 wherein said valve is normally closed.

17. The apparatus of Claim 6 wherein the function of said control rods is replaced by at least one nitinol actuator.

20 18. The apparatus of Claim 6 wherein said control rods are replaced by a plurality of electrically activated nitinol actuators affixed across the region of increased flexibility.

19. The apparatus of Claim 6 further comprising a valve to selectively control the efflux of fluid from the thoracic cavity.

25 20. The method of Claim 9 further comprising the step of selectively opening or closing a valve to control the drainage of fluid from the thoracic cavity.

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